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American Foundryman

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December
1938

Why Is Apprenticeship Like The Weather?

THERE are three major similarities between apprenticeship and the weather. For years, the American Foundrymen's Association has had an apprenticeship committee whose purpose has been to remove apprenticeship out of the weather category, and some progress has been made. But not enough. Why?

Apprenticeship is like the weather because we always have it with us. Whenever you look up from your desk or your job in the shop, you see the sunshine or the rain, and, whenever you look up from your work, you see an apprentice. Maybe you do not call him that. Perhaps he is a helper or a handyman or just "that new kid working with Jim." But, if he is learning something about your business, he is, in a sense, an apprentice. You have organized everything about your business but the training of that kid. Credits and collections, hiring and firing, costs and payroll, all have been systematized to the best of your ability. You would not be in business if that were not true.

Then why not organize the training of your new man? If you do, he will learn more in a short time and be worth more to you. You must teach him how and why. The answer is organized apprenticeship. Why not?

Apprenticeship is like the weather because everyone talks about it and only a very few do anything about it. That is almost what Mark Twain said about the weather, only he contended NO one does anything about it.

Is it quite so in apprenticeship? Some employers have really "gone to town" with it. Others have gone part way. Your Apprentice Committee has conducted contests for apprentices with the view to stimulating interest in it and showing what apprentices can do. Your conventions have included apprenticeship sessions so that those who know can say how and why apprentices should be trained. So, why not get on the wagon? Why?

Apprenticeship is good business, that is, if it is handled properly and controlled. Unlike the weather, it can be handled and controlled. And it brings results. Ask the man who has apprentices.

Victor J. Hydar

Chairman, Apprentice Committee.

V. J. Hydar started with the Falk Corporation in 1922 as engineering apprentice, in 1926 became assistant apprentice supervisor, then apprentice supervisor. Later he had charge of employment and personnel work. He left the Falk Corp. Oct. 1, 1938, to work with Federal Committee on Apprenticeship, primarily to promote the work among Metal Trades employers and groups. He has been a member of the A.F.A. Apprentice Committee since 1932.

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American Foundryman

CONTENTS

December, 1938

Volume I — No. 6

	Page
Why Is Apprenticeship Like the Weather, by *V. J. Hydar*	Inside Front Cover
Cornell Regional Conference	2
Foundry Needs Foreman Training, by *W. G. Conner, Jr.*	4
Preprint Distribution Policy	5
Nominating Committee Invites Suggestions	5
Why Bound Volume of Transactions	6
Gray Iron Foundry Holds Open House	7
Industrial Absenteeism, by *P. C. Brehm* and *H. W. Ruf*	8
How Would You Make It?	10
How an Apprentice Viewed the Contest, by *M. Putz*	10
Benefits of Competitive Training, by *A. R. Luebke*	11
New Members	12
December and January Chapter Meetings	13
Chapter Activities	14

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Cornell Conference Attracts Record Attendance Despite Snowstorm

THE weather man with his heavy snowstorm in northwestern New York on the Thanksgiving week-end, did not prevent a record number of some 200 from attending the second two-day foundry conference held at Cornell University, Ithaca, N. Y., on Friday and Saturday, November 25 and 26. This attendance greatly exceeded that of last year's conference and was made possible by the excellent reputation established by the meeting last year and the quality of the program for this year's conference.

The Committee

The success of the conference was due to the outstanding work of the conference committee under the chairmanship of Henry B. Hanley, foundry manager, American Laundry Machinery Co., Rochester. Those serving with Mr. Hanley were M. A. Pohlman, Pohlman Foundry Co., and R. K. Glass, Republic Steel Co., representing the Buffalo A.F.A. Chapter; H. H. Judson, Goulds Pumps, Inc., and J. L. Lonergan, Morris Machine Works, representing the Syracuse Foundrymen's Association, and Professor A. C. Davis, Cornell University, representing the College of Engineering.

This committee assembled speakers and discussion leaders who presented an exceptionally well balanced and valuable program of interest to executive and shop men. Practically all the talks might well be considered high spots of the conference, each adding much to the value of the conference. The meetings were held in the rooms of Willard Straight Hall on the University Campus.

Chairman H. B. Hanley Opens Conference

Conference Chairman Hanley presiding at the opening session introduced S. C. Hollister, dean of the College of Engineering, and R. E. Kennedy, secretary of A.F.A., who welcomed the members on behalf of the school and the A.F.A. Following this, the first discussion session was convened with Ralph T. Rycroft, Jewell Alloy & Malleable Co. of Buffalo, presiding. W. J. Diederichs, metallurgist, Autocar Co., Ardmore, Pa., gave an unusually interesting and clear exposition of the fundamentals of the metallurgy of pearlitic malleables. His treatment was such as to show the connection between steel structures and malleable.

Willard Rother, Buffalo Foundry & Machine Co., presided at the second session. The subject was "Gates and Risers," and Pat Dwyer, engineering editor, The Foundry, gave one of his inimitable, practical and humorous dissertations, which stressed various important gating and risering methods.

Dean Kimball Discusses Art Bronzes

At the luncheon meeting which followed, Dexter S. Kimball, dean emeritus of the College of Engineering, presented an illustrated talk, which made those present feel proud of the foundry art. Dean Kimball discussed the ancient and medieval art of casting statuary bronze figures, showing some of the most famed castings, together with a description of method of casting used which was the lost wax process.

Health and Safety

The conference continued with a session on dust hazards, Elliott Armstrong, Inter-Allied Foundries of New York State, presiding. Mr. Armstrong first introduced Dr. Leonard Greenburg, executive director, Division of Industrial Hygiene, New York State Department of Labor, who presented a review of a survey of several thousand foundry workers, which indicated conclusively that silicosis among foundry workers is not the hazard that some had previously considered it. This talk was followed by one on the aspects of foundry safety and cleanliness as presented by E. O. Jones, A.F.A. director of Safety and Hygiene.

Reese on Cupola Operation

The final technical session of the first day was that on cupola practice with M. W. Pohlman, chairman of the A.F.A. Buffalo Chapter, presiding. The speaker was Donald J. Reese, International Nickel Co., New York, who gave an exceptionally clear

A Group at the Cornell Conference Lining Up for Their Snowshoes

and practical discussion of the fundamentals of cupola operation.

Industrial Relations Emphasized by Voss

The conference banquet was held in the majestic Memorial Room of Willard Straight Hall, Mr. Hanley introducing Marshall Post, president of the A.F.A., as the toastmaster. During the dinner a pleasing music program was supplied by the Rosser Trio and following the dinner the Savage Club Quartet entertained with a selection of songs. This music was made available through the courtesy of Van Loan Whitehead, Jr., Whitehead Bros., Buffalo. President Post, after introducing some of the members of the chapter, called upon Mr. Hanley as chairman of the conference committee, who paid high tribute to his committee for their cooperation. Dean Hollister was then introduced and he gave an interesting discussion of the earlier workers in the metallurgical field. The speaker of the evening was J. A. Voss, director of Industrial Relations, Republic Steel Corporation, Cleveland. Mr. Voss presented his views on the responsibilities of industrial management, stressing the importance of keeping workers informed on company policies. In concluding, he discussed some phases of the check-off system.

Steel and Sand

The Saturday meetings were started with a session on steel castings. Presiding was T. H. Burke, Otis Elevator Co. The speaker, Karl V. Wheeler, Lebanon Steel Foundry, Lebanon, Pa., made an outstanding contribution with his talk on the designing and application of steel castings, showing the great advancements made in recent years by the steel foundryman in quality of product and increase of properties. The second session was on sand control problems. H. W. Dietert, Harry W. Dietert Co. of Detroit, the first speaker, reviewed causes of defective castings due to sand troubles. He then showed how these causes could be remedied. The second speaker, H. L. Yorke, Cornell University, presented a report covering the research work on the behavior of sands and binders at high temperatures. This work is being carried on as an A.F.A. sponsored project, under the supervision of a special committee of the Steel Division and Sand Research Committee.

Following the Saturday luncheon meeting, L. P. Wilson, professor of law, Cornell University, talked on international relations.

metal crystallization demonstration staged by Dr. C. W. Mason, of the Cornell University Chemistry Department. Dr. Mason, with a special arrangement of a microscope and projector showed on a large screen the freezing of crystals, forming grain boundaries, eutectic formations and exclusion while freezing of impurities. This demonstration made clear in a visual way what happens in metals while they are freezing, giving a better understanding of microstructures.

Some groups at Cornell Conference—(upper) Sand Committee holds a meeting—(center) Lonergan, Watson and Rycroft after a luncheon—(lower) Jones, Waldron and Cluff discuss safety problems.

The final conference session was devoted to elementary metallurgy. H. C. Waldron, Nordberg Mfg. Co., Milwaukee, gave an instructional talk designed for the shop man.

Spectacular Crystallization Demonstration

While last on the program, the most spectacular event was the

Copies of Talk by Voss Available

The A.F.A. has been informed that copies of the talk given by J. A. Voss at the dinner meeting in which he discussed industrial relations, may be obtained by any one interested, writing to Mr. Voss care of the Republic Steel Corporation, Cleveland, Ohio.

The Foundry Needs Foremen Training

By W. G. Conner, Jr.,* Greensburg, Pa.

This article on foreman training was prepared by Mr. Conner, at the request of the A.F.A. Committee on Foreman Training, as one in a series of such articles to appear in American Foundryman. Mr. Conner is a member of the A.F.A. Committee on Apprentice Training.

EXISTING conditions in the foundry today disclose, as never before, the need for foremanship training. Labor unions and labor legislation during the past two years have brought about numerous changes in the technique of handling men. The foreman, in order to succeed, must be taught to interpret, to a degree, these new laws and agreements. Furthermore, he must be trained in the methods that have proved most successful in carrying out the terms agreed upon in these union contracts. To meet these conditions, it is of the utmost importance that industry, generally, and foundries in particular, initiate constructive training programs for their foremen without delay. Such courses may be carried out by individual companies, groups, or at local foundry meetings of the American Foundrymen's Association. This training should be developed primarily for prospective foremen, but those who today are fighting the battle should also be given an opportunity to profit by its teachings.

Two Important Reasons

Plant executives, in all probability, realize the acute necessity for training foremen. The present low rate of production, with very limited profits, if any, has caused such a program to be held in abeyance. There is, however, no escape and the training of foremen will have to be started for two very important reasons:

(1) The desire of plant executives to carry out their part of a union contract with a minimum of complaints, makes it essential that foremen be adequately trained in order to reduce the number of grievances and to build and maintain good will.

(2) Very few men have been trained for foremanship during past years. Further reduction in the number of efficient foremen has been caused by consolidations of departments and plants, necessitated by adverse business conditions. Foremen have been reduced in rank, and before they can intelligently assume their former positions, some training should be offered. Any permanent increase in production throughout the industry would cause an immediate shortage of experienced leaders.

The Major Problem

The urgent need of a training program in order to improve present supervision and develop new material can readily be seen. The major problem is: Who shall be trained and how shall the candidates be selected? The education of present foremen, in the rapidly changing conditions, presents a problem. These men have the advantage of many years of experience. In many instances, however, their methods and opinions are antiquated and need correction. The training should, therefore, provide for the necessary corrections, and in all probability, each foreman will have to be given some individual attention.

Selection

The selection of suitable material for prospective foremen is a most difficult task. The process of training should require a constant "weeding out" of the incompetent. Then, after the completion of a well planned course of training, under able tutelage, the results obtained on a definite assignment should be final proof of success.

It is essential that a foreman should possess more than a fundamental knowledge of the various foundry processes. A knowledge of melting, cupola, furnace, molding, machines, patterns, cores, sand, cleaning, heat treatment, etc., may be required, in part or full, depending on the particular position to be filled. Under existing conditions this wealth of information may be secondary in summing up the qualifications of a foreman. The responsibility for supervising some of the basic foundry processes may be assigned to subordinates, enabling the foreman to concentrate on the far more important duty—the handling of men.

Human Relations

The most significant factor in determining the ability of a foundry foreman, under present day conditions is his successful handling of human relations. Concentration should, therefore, be made on this portion of the training program. The foreman should possess and be able to apply a knowledge of elementary psychology, and be well versed in the diplomatic handling of any situation. These traits deserve the utmost consideration in the selection of prospective leaders. The foreman is the keystone in industry and it rests with the management to properly select, educate and train men for this important position.

Foreman Training Committee's Program

THE A.F.A. Committee on Foreman Training under the chairmanship of A. D. Lynch, personnel manager, J. I. Case Co., Racine, is developing a discussion session for the 1939 Cincinnati convention. Serving with Mr. Lynch are W. E. George, Campbell Wyant & Cannon Foundry Co., Muskegon, Mich., and Geo. J. Leroux, National Malleable and Steel Casting Co., Cleveland. The report of their session for the 1938 convention is reviewed on the opposite page under reprint 38-40. The 1937 Foreman Training Session proceedings is available as reprint 38-31.

*General Foreman, Malleable Foundry, in Charge of Foremanship Training, Walworth Co.

Preprint Distribution Policy

THE method of distribution of preprints is being changed from that formerly in vogue, which was to send all preprints to all members. Because many members have stated they did not want all papers but only those in which they are particularly interested, the Association will in the future furnish members with a list of those available, and the member will then select those he desires, returning his list to the A.F.A. for filling.

Recently the first request form under this plan has been mailed to members, listing three papers, one a report of the Cleveland Convention sessions on Foreman and Apprentice Training, the other two being papers for the 1939 Cincinnati Convention. Digests of these three papers are given below. If you have not ordered these on the card previously sent you, you may get them by mailing a request to the Association office.

Preprint 39-1—Production of Uniform Dense Structures in High Test and Alloy Iron Castings

By M. A. Scott,
Greenlee Foundry Co., Chicago, Ill.

The author discusses the effects of temperature of sand adjacent to gates and risers. To overcome problems in producing uniform, dense structure castings of high test and alloyed iron, experimental work was conducted by pouring castings through risers as gates. It was found that this method of gating and risering was very successful. The investigation carried on, as discussed in this paper, was developed from a desire to determine why shrinkage holes in some cases appeared at the gates and in the adjoining metal. From the experiments, it was observed that the temperature of the sand surrounding the gates and risers greatly influenced shrinkage. With this in mind, a gating and risering practice was developed which took into consideration the effect of hot sand. The practice has been used successfully on such castings as bushings, die wheels, rolls, etc.

Preprint 39-2—High Conductivity Copper Castings

By A. B. Kinzel, Union Carbide & Carbon Research Laboratories, New York City.

The industrially available alloys which have high strength combined with high electrical and thermal conductivity are reviewed. When more than 80 per cent conductivity is required these precipitation type alloys are based on chromium, usually present as a silicide or beryllide. Nickel or cobalt similarly present results in 45 and 60 per cent conductivity, respectively. Recently patented alloys with high conductivity are discussed together with the effects of silver, cadmium, tin and zinc, and the melting practice is considered with special reference to the roles of deoxidizers, graphite, iron and phosphorus. In conclusion, uses of the alloys are cited and a plea is made for cooperation between scientist and foundryman.

Reprint 38-40 — Foreman and Apprentice Training in Foundries

Under foreman training, A. C. Horrocks, Goodyear Tire and Rubber Co., Akron, O., presents an inspiring address on some of the present day problems of foreman relationship. He first lists some of the problems encountered and presents questions which the foreman is expected to answer. Executives are presented with ideas which stress the importance which they should give to training their key men in the shops. The discussion following Mr. Horrocks' talk will be found of value, as it relates to the small and large plant conditions.

The three papers on apprentice training show what is being accomplished, first in Wisconsin under the state plan through a paper by J. E. Tepoorten, occupational extension coordinator of Wisconsin Vocational and Adult Schools. In the second paper by E. N. Brough, foundry superintendent, Fairbanks Morse & Co., St. Johnsbury, Vt., is given a review of the training plan of a shop with some 600 employees, which has graduated 129 apprentices with 32 per cent remaining with the company. The third paper presents an apprentice training situation in western Canada as told by A. W. McCallum of Anthes Foundry, Ltd., Winnipeg. Fifteen pages of discussion of these these papers make most interesting reading.

Nominating Committee Invites Suggestions from Members

THE 1939 Nominating Committee, planning on holding its meeting in January, invites suggestions from members for consideration as officers and directors to be placed in nomination for election by letter ballot next spring. Nominations to be made are for:

President, to serve for one year.

Vice-president, to serve for one year.

Five directors, to serve three-year terms.

The members of the Nominating Committee consist of three past-presidents, who are:

Frank J. Lanahan, Fort Pitt Malleable Iron Co., Pittsburgh, Pa.

James L. Wick, Jr., Falcon Bronze Co., Youngstown, O.

H. Bornstein, Deere & Co., Moline, Ill.

And four members elected at the Cleveland Convention. The elected members are:

A. L. Boegehold, General Motors Research Laboratory, 485 West Milwaukee Ave., Detroit, Mich.

L. H. Rudesill, Griffin Wheel Co., 445 N. Sacramento Blvd., Chicago.

Sam Tour, Lucius Pitkin, Inc , 47 Fulton St., New York, N. Y.

Walton L. Woody, National Malleable & Steel Casting Co., Sharon, Pa.

Alternates:

R. R. Deas, Jr., American Cast Iron Pipe Co., Birmingham, Ala.

Robert Gregg, Reliance Regulator Corp., Los Angeles, Calif.

W. C. Hartmann, Bethlehem Steel Co., Bethlehem, Pa.

Joseph Sully, Sully Brass Foundry, Ltd., Toronto, Ont., Canada.

The committee welcomes suggestions and members having names to propose are urged to communicate them to any member of the committee or to the office of the Association.

Some points which the committee would like to have kept in mind in submitting names are:

(a) Record of the candidate's activities in Association affairs, such as committee service, chapter work, personality and presentation of papers.

(b) Representation of branches of the industry, and

(c) Representation of geographical districts.

For the information of members in making suggestions to the

(Continued on page 7)

Why Bound Volume of Transactions?

THE Bound Volume of Transactions carrying the papers, committee reports and discussions of the 1938 Cleveland Convention, is on the press. Order cards have been sent to all members, and the distribution will be made in the near future. The present volume is No. 46. Think of it, 46 volumes of papers by the best men of the industry, over the last 40 years, years of development and progress in metallurgy, in production methods and shop practice! Volume 46, with over 1,000 pages, contains what is recognized as the most instructive and valuable set of papers on founding ever assembled within one cover. Fortunate is the foundryman who has at his command the written record of the experts who have contributed to this volume.

Further, those members who have in the past started their collection of A.F.A. Bound Volumes are building a library of reference work which, when studied, presents for their use ideas and data which can be applied to improve practices and products.

Various members have commented favorably on the Transactions, and a quotation from one member is of greatest interest. This is from Arnold Lenz, that outstanding foundryman, who has advanced through various foundry jobs from molder to his present position as assistant manufacturing manager of the Chevrolet Motor Division of General Motors. He referred to these Bound Volumes when he was presented with the A.F.A. Gold Medal at the Philadelphia Convention in 1934 for his achievement in the foundry industry.

"Groping for inspiration," he said, "I turned in my chair and looked down the row of Transactions of the A.F.A., dating back to 1911. The 1911 volume was within my reach, so I picked it up and started to look through it.

"The first article that came to my attention was by Thomas D. West. This particular article was on scrap, dealing principally with blow holes and shot in castings. It is just as good today as when it was written, 22 years ago. I read most of it again, perhaps for the tenth time, and I recommend it to anyone who is worried by scrap troubles.

"There were other interesting articles in this book, one on sand testing, one on permanent molds by Custer; the efficiency movement in the foundry; mechanical charging of cupolas, and an article by Dr. Moldenke covering an investigation of a method of briquetting borings by means of pressure only."

Other members who know, as does Mr. Lenz, the value of using the experiences of others, have valued their Transactions and keep their sets up-to-date as they are issued. While new members of the A.F.A. do not have an opportunity to secure many of the Transactions of past years, they can start their collections with Volume 46. There are also limited supplies of Bound Volumes for 1933, 1934, 1935, 1936 and 1937 available to those members who wish to have a more complete series for reference. These years of 1933 to the present have been big development years.

Bound Volumes Available

Vol.		
46 (1938)	price to members $3.00,	non-members $15.00
45 (1937)	price to members $3.00,	non-members $10.00
44 (1936)	price to members $2.00,	non-members $ 6.00
43 (1935)	price to members $2.00,	non-members $ 6.00
42 (1934)	price to members $2.00,	non-members $ 6.00
41 (1933)	price to members $2.00,	non-members $ 6.00

Send order to American Foundrymen's Association, 222 West Adams St., Chicago.

Fig. 1—Open House Display Showing Housekeeping Equipment and Bulletin Boards—Hamilton Foundry & Machine Co.

Gray Iron Foundry Holds Open House and Starts Safety Campaign

A MOST successful effort on the part of a gray iron foundry to interest the public in its work was displayed by the Hamilton Foundry and Machine Company of Hamilton, O. Peter E. Rentschler, president of the company, reports that on October 8 and 10 an "Open House" exhibition was held. On the 8th, 711 persons registered, consisting only of employees and members of their families. On the 10th, many designers, engineers and users of castings came by invitation. Firms using castings made by the company loaned finished products or finished parts, showing castings uses.

The open house exhibit came about primarily because of the safety and hygiene program carried out by the company under Mr. Rentschler's direction since last June. The hygiene program included talks and movies by outside medical men on silicosis, tuberculosis and other diseases, and the reaction was so favorable that the employees requested that the tuberculosis program be put on for their families.

At the open house on October 8, Dr. W. J. Smith, chief of the Ohio State Department of Health, Bureau of Tuberculosis, was present to show his movies "Live and Let Live" and "Contacts and How They Are Made," and during the day gave his talk four times to four different groups of employees and their families.

The safety campaign promoted by the company started in September under the auspices of the Industrial Commission of Ohio and the National Safety Council, and this was featured in the "Open House." The photographs reproduced on this page show as a permanent display the protective safety and health devices and appliances used in the plant.

The first aid room wall in the back is the board to show the forms used by the Industrial Commission and safety and hygiene literature furnished by the Commission. Other items show devices or apparatus used in the plant.

In the foreground, Fig. 1, is an oil dust layer and a portable vacuum cleaner, and in the background a safety ladder, safety shoes, safety car door opener, safety car mover and types of fire extinguisher. In the permanent display case are types of goggles for molders, chippers and grinders, and cupola men, leggings for men handling molten metal, respirators, blasters, hoods, health guard masks, together with a display of tools in such shape they should not be used as chisels and hammers with mushroom heads and split handles.

Fig. 2 shows some of the same displays as Fig. 1, but in the right foreground is a display table with materials for melting. An adjoining table displayed the equipment used by a squeezer molder.

Mr. Rentschler reports that the idea of the display case came from some of the exhibits of the A.F.A. Department of Safety and Hygiene at the Cleveland convention.

Nominating Committee Invites Suggestions

(Continued from page 5)

Nominating Committee those officers and directors whose terms expire next spring are:

President, Marshall Post, Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa.

Vice-President, H. S. Washburn, Plainville Casting Co., Plainville, Conn.

Directors, Jas. R. Allen, International Harvester Co., Chicago.

D. M. Avey, Chicago.

C. C. Gibbs, National Malleable & Steel Casting Co., Cleveland, O.

L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala.

C. E. Sims, Battelle Memorial Institute, Columbus, O.

Fig. 2—Open House Display — Safety Exhibits in background; materials for melting, right foreground.

Hygiene

Industrial Absenteeism

By Paul A. Brehm,* M. D., and Harold W. Ruf,* Ph. D.,
Madison, Wis.

THE time loss of skilled employees because of sickness or accident is of vital importance to any industry. There is no question of the economic loss to industry in production and certainly no question of the economic loss to the employee in reduced income occasioned by prolonged disability.

Cost of Illness

It is possible to evaluate quite accurately the time and financial losses caused by industrial accidents but difficult to form any comparison or accurate estimate of time loss or the cost to the worker and industry of illnesses. The reason for this is that very few industries keep as complete sickness records as they do accident records. If the costs of illness in various industries were accurately known, it would be startlingly high; in fact, it is believed by many that it would be considerably greater than that of industrial accidents. Industry is vitally interested in keeping production costs at a minimum, and yet is almost completely neglecting one of the major causes of reduced production—namely, the cost of sickness.

In discussing the problem of illness in industry, Dr. R. R. Sayers, senior surgeon, U. S. Public Health Service, stated:[1]

> "While accidents, occupational diseases and high occupational death rates appear to be impressive, there is no doubt that the least dramatic side of the problem is probably far the most important—namely, the lost time and incapacity due to illness."

Absenteeism Studies

A careful study[2] of absenteeism in 116 companies led Dr. M. N. Newquist to conclude that occupational diseases account for 0.01 days lost per employee per year; industrial injuries, 0.59 days per employee per year; whereas, non-industrial injuries and illnesses amount to 8.85 days lost per employee per year.

An absentee study[3] was made by Dr. R. B. Robson at a single plant operated by General Motors of Canada during 1936-1937. This study showed that the time lost due to non-industrial injury and illness amounted to 3.118 days per employee per year in 1936, and 2.546 days in 1937. The average number of men employed in 1936 was 355 and during 1937, 516.

Dr. Newquist estimates the cost of absenteeism due to non-industrial injuries and illnesses as follows:

> " . . . if 50,000,000 workers in the United States lose 400,000,000 days annually on account of injury and illness this would represent a loss to the workers of $2,000,000,000 per year at a wage rate of $5.00 per day."

Data Essential

In the formulation of a logical illness prevention program, knowledge as to the types of disease as well as the frequency and duration is essential. Brundage in a study[4] of the frequency of disability lasting more than one week due to specified disease groups in a group of male industrial workers employed in different industries, 1921 to 1928, obtained the following data:

Table I

Disease Group	*Percentage of total cases*
Sickness and non-industrial injuries	100.00
Non-industrial injuries	9.9
Diseases of respiratory system	42.4
Diseases of digestive system	13.5
Diseases of the circulatory and genito-urinary systems	6.8
Rheumatism (acute and chronic)	5.8
Diseases of the nervous system	4.3
Diseases of the skin	3.8
Diseases of the organs of locomotion	3.3
Epidemic and endemic diseases	2.6
All other diseases	7.6

Inman in a similar study[5] made among 2500 employes of the Philadelphia Gas Works Company found that 60 per cent of the causes of disability could be classified as respiratory. These data indicate that the majority of sickness absenteeism can be attributed to respiratory causes. The fact that diseases of the respiratory system account for almost half of the total illnesses aids materially in outlining a program of prevention and control.

Value of Statistical Records

In the attack of the accident problem one of the most important aids has been statistical records. It is only by knowing where and how accidents occur that comprehensive programs of prevention can be successfully planned and carried out. If accident records are aids in the attack of this problem, is it not therefore just as important in

*Industrial Hygiene Unit, Wisconsin State Board of Health.

[1] *Health Promotion in Industry*, Industrial Medicine, Vol. 7, July 1938, pp. 410-418.

[2] *Medical Service in Industry and Workmen's Compensation Losses.* Published by American College of Surgeons.

[3] *Sickness in Industry.* Industrial Medicine, Vol. 7, No. 8, pp. 483-485.

[4] Dean K. Brundage, *The Incidence of Illness Among Wage Earning Adults.* Journal of Industrial Hygiene, Vol. 12, Nov. 1930, pp. 338-358.

[5] R. B. Inman, U. G. I. Circle, Philadelphia Gas Works Co., 1930.

a sickness prevention program that records be maintained?

The following excerpt from a pamphlet[6] of the National Safety Council illustrates the advantage of keeping such records:

> "One of the most outstanding facts about sickness either in the general population or among industrial workers is its uneven distribution. One company found that 55 per cent of its employees had no absences due to sickness during an entire year. A small group (only 18 per cent of the employees) accounted for about 82 per cent of all the time lost on account of illness. In two successive years excessive disability involved to a large extent the same group of individuals."

With the above facts in mind the medical director or the personnel department could investigate the reasons why 18 per cent of employees accounted for 82 per cent of all time lost due to illness. If the 18 per cent were largely working in one department, an investigation could be made to see if any environmental factors contributed to this high rate. On the other hand if these same employees were scattered throughout the plant, the investigation would lend itself as a guide to a careful medical study to ascertain the existence of physical defects or predisposing factors toward disease requiring attention and correction.

Those industries that do keep accurate sickness records and carefully analyze the facts derived therefrom are convinced that it is a worth-while project. Accurate sickness records can be maintained as easily and as completely as accident records. It should not, as a rule, necessitate additional personnel for this purpose; the same responsible individual in a plant should be able to keep both records.

The method of keeping sickness statistics should be uniform at all times, so as to afford a means of comparison over a long period of time. While any sickness records that are consistent and uniform are beneficial, it is felt that all illnesses of 24 hours or longer should be recorded in view of the fact that generally about 50 per cent of the absences due to illnesses are of one to two days' duration.

Wisconsin Program

The importance of keeping records of industrial absenteeism from the standpoint of industrial hygiene and the benefits to be derived by industry and labor, has led us to inaugurate such a program in Wisconsin. At the present time, 22 foundries and manufacturing plants employing approximately 6700 persons have consented to cooperate in this study. Eventually it is hoped to conduct similar studies in various types of industrial environments.

The plant to be used in making this study is as follows:

(A) Uniform data sheets, to cover a period of one month, are submitted to each plant. The information requested on the data sheets is given in Table 2. A responsible individual in each plant records all absentees over 24 hours. For purposes of classification all foundry workers are divided into four major groups—namely, foundry, coreroom, cleaning, annealing and shipping, and service. The total man working days per month, and total payroll per month for each of the above group are supplied with the monthly report sheets.

Table 2

1. Name or Number
2. Sex
3. Age
4. Department
5. Type of work
6. Date Individual Stopped Work
7. Date Individual Returned to Work
8. Actual Working Days Lost
9. Actual Wages Lost in Dollars
10. Cause of Absence
    - Sickness
    - Industrial Accidents
    - Non-industrial accidents
    - Other
11. Type of Illness (To be Classified according to U.S.P.H.S. classification in Morbidity and Mortality Studies)
12. Remarks

(B) The completed monthly reports are to be submitted to the Industrial Hygiene Unit, where the statistics for each plant and the entire group will be analyzed.

(C) If the statistics indicate excessive sickness rates in any particular case, studies are to be made to ascertain if remedial steps can be taken to reduce this rate.

Conclusion

In conclusion, it may be said that sufficient data have been obtained from a number of investigations to conclusively show that the problem of sickness in industry is one causing considerable financial loss to both employee and employer. While at first thought, illness seems to be a necessary evil, experience has shown that frequently by a comprehensive program much can be done to reduce the incidence. One of the essentials in the reduction of illness is adequate sickness records so as to point out where the efforts should be concentrated in order to take the proper remedial steps.

Recommended Practice Codes on Dust Elimination in Demand

THE need for such work as that of the Industrial Hygiene Codes Committee is shown by the demand for the three codes of recommended practices which this committee has issued. The office of the Association is receiving requests constantly and in considerable numbers for the codes. These three are:

Tentative Recommended Good Practice Code and Handbook on the Fundamentals of Design, Construction, Operation and Maintenance of Exhaust Systems (1938), 141 pages with 35 charts and tables of layouts and data.

Tentative Code of Recommended Practices for Testing and Measuring Air Flow in Exhaust Systems (1936), 13 pages with 12 drawings and charts.

Tentative Code of Recommended Practices for Grinding, Polishing and Buffing Equipment Sanitation (1936), 23 pages with 20 drawings and charts.

The committee, under the chairmanship of Jas. R. Allan, International Harvester Co., Chicago, is continuing its work, and will shortly have a fourth code completed, this covering castings cleaning.

[6] Health Practices Pamphlet No. 19. *Illness in Industry*, National Safety Council.

Apprentice Training

How Would You Make It?

THE apprentice molding contest as held at the Cleveland convention emphasized the wide divergence in gating and molding practices throughout the country. This holds true for the pattern making, gray iron, steel and non-ferrous molding competitions. Below there is shown pictures of seven of the castings entered in the gray iron group. All these castings were made from the same pattern, but each reflects the practices followed in a particular shop. No. 13, made by Chester Marzec, of the Cleveland Trade School, was awarded first place; No. 5, made by Robert Pohlman, Carondelet Foundry Co., St. Louis, was awarded second prize, and No. 15, molded by Jerry Halek, Johnston & Jennings Co., Cleveland, third prize. The remaining castings were made by Virgil Parrill, Caterpillar Tractor Co., Peoria; Arthur Hedberg, International Harvester Co., Rock Island, Ill.; Albert Schaeffer, Frank Foundries Corp., Moline, Ill., and Herbert Turner, Fairbanks, Morse & Co., Beloit, Wis.

It is particularly interesting to note the various measures used to secure clean metal in the castings and the various sizes of risers used. In two cases it appears as though pouring through the riser, as advocated in the paper by Brisbois and Cartwright, presented at the 1938 convention and published in the September, 1938 issue of Transactions, pp. 219-256, was used.

The judges, in making the awards, based their decision on a schedule taking into consideration moldability, ease of cleaning, risers and gates, recovery, workmanship and time. The time of molding of these castings varied from 30 minutes to 1 hour and 20 minutes.

The photographs of the various castings were obtained through the courtesy of the Cleveland Trade School, Cleveland, Ohio.

Castings Entered in Gray Iron Apprentice Molding Contest at 1938 Cleveland Convention

How An Apprentice Viewed the Contest

By Martin Putz, Foundry Apprentice, Fairbanks, Morse & Company, Beloit, Wisconsin

THE pattern for the 1938 apprentice molding contest was brought to our plant by Mr. Hydar of the Falk Corp. in Milwaukee, Chairman of the A.F.A. Apprentice Training Committee. The contest was conducted under his personal supervision. Each contestant was timed from the minute the pattern was placed into his hands. Any questioning whatsoever, concerning his difficulties, would automatically eliminate him.

The scoring of the castings was arranged upon a very ef-

fective basis. Each phase of molding was graded according to its greater or lesser importance. Gates and risers, general appearance, soundness and time were accredited, forty-five, thirty, fifteen and ten per cent, respectively.

After ramming and pouring, shaking out and sand-blasting, the castings were brought to the office of Mr. George Zabel, our foundry superintendent. He in turn summoned his assistants, Mr. Nass and Mr. Reitler, who enlightened the apprentices upon the fundamental principals of molding, its difficulties and means of overcoming them and many of the intricacies involved in making this casting.

Judging the contest from its beneficial standpoint, we can frankly say that it made three outstanding impressions. First, it checked an over-abundant self-confidence, which only too often tends toward leading one to failure instead of success. Second, it instilled a spirit of competition among the apprentices themselves. Last and foremost, it inculcated a desire to acquire individual initiative.

What future contests hold in store for us remains to be seen. Nevertheless, it is our hope that through further experience we may become valuable assets to this firm.

Benefits of Competitive Training

By A. R. Luebke, Beloit, Wis.

Mr. Luebke, Supervisor of Apprentices, Fairbanks, Morse & Co., has submitted the following item prepared at the request of the Association, giving his reaction to the apprentice contest as held in his plant last spring. As this contest was a part of the A.F.A. national contest for pattern and molding apprentices, Mr. Luebke has indicated how they can be made of greatest value to the firm and the apprentices taking part.

THE ability of each individual apprentice cannot accurately be determined until each has been given an opportunity to demonstrate his resourcefulness and judgment in a competitive contact between boys in training. Contests of this type can be considered an examination on the progress made, and assimilation of knowledge on the fine points of foundry practice. We can assume that a certain young man has made rapid progress because he does good work and learns rapidly. An examination conducted whereby he cannot secure assistance or advice will bring out items on which he lacks thorough understanding. This fact was brought home to us during the 1938 contest sponsored by the American Foundrymen's Association.

We were very confident of our boys' ability and expected them to capture one of the prizes offered. After the castings were removed from the molds and checked by the committee the findings were placed before our superintendent of foundry, George Zabel. Mr. Zabel was very interested in this report and personally checked over the castings with the committee. He then called the contestants into his office, questioned and explained to them many fine points about molding. This discussion proved so interesting that it was decided to conduct two four-hour classes on instruction, to which all foundry and pattern shop apprentices were invited.

The first of the classes covered the general foundry practice. The boys were questioned, asked questions, and had explained to them many of the fine arts of molding. Mr. Zabel personally explained to them foundry costs, scrap costs due to defective castings and losses due to heat shrinkages. His assistants explained proper partings, gates, risers, sprues, etc., and answered numerous questions. Part of this instruction was conducted on the floor, where individual castings were selected as subjects. The boys were very interested and each had numerous questions to ask on certain subjects on which they lacked an understanding.

The second period was devoted to lectures conducted by our metallurgist, Mr. Winte, on the analyses and properties of iron, proper mixtures, cupola practices, charging, and the reasons for hard and soft iron. Throughout the meeting the boys were privileged to ask questions on points they did not thoroughly understand.

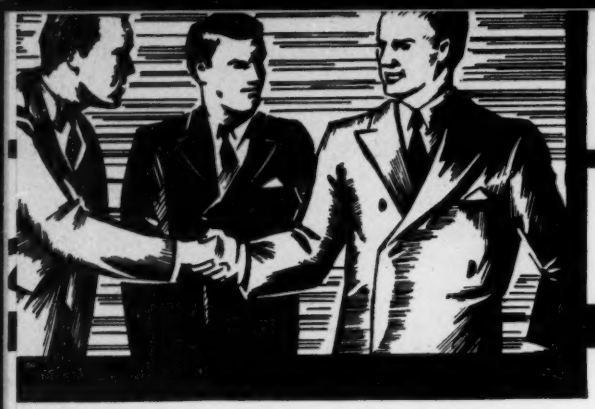
We were very pleased by the results obtained from these meetings, the reaction received from the apprentices was splendid. The general opinion expressed by these boys was that if these lectures had been given prior to the contest the results obtained would have been entirely different.

They are now looking forward to the 1939 contest and are confident the results obtained from the last contest have given them a better understanding and education on foundry practice.

BOOK REVIEW

Third Report of the Steel Castings Research Committee, Special Report No. 23, cloth bound red, 294 pages, 136 figures, 90 tables, published by the Iron and Steel Institute, 4, Grosvenor Garden, London, S.W.1.

This report is divided into six sections which contain the following: (1) Introduction, (2) The Fluidity of Iron-Carbon and other Iron Alloys, (3) Copper-Steel Castings, (4) Strength and ductility of cast steel during cooling from the liquid state in sand moulds, (5) First report of the moulding materials sub-committee, (6) Bibliography on the manufacture, properties and testing of steel castings. The various papers contain research done by the leading steel men of Great Britain and is of interest to American foundrymen as a good comparison of the trend in Great Britain and America can be obtained. Also of interest to American steel men is the fluidity test proposed by Ruff and experimented on by R. J. Sarjant and T. H. Middleham. In this experiment the experimentors give curves and tables of data to show the effect of composition, temperature and time on fluidity when using this method.



New Members

Company Members

Crivel-Feine Clay Co., Inc., Buffalo, N. Y.
Electro Refractories & Alloys Corp., Buffalo, N. Y.
Excel Brass & Aluminum Foundry & Pattern Shop, Pekin, Ill.
Fahralloy Canada Ltd., Orillia, Ont., Canada.
Fisher Brass, Inc., Marysville, Ohio.
The Lauson Company, New Holstein, Wis.
Material Service Corporation, Chicago, Ill.
Parker-Street Castings Co., Cleveland, Ohio.
Sturtevant Mill Co., Dorchester, Boston, Mass.
Texas Electric Steel Casting Co., Houston, Texas.

Conversion From Limited Firm Membership

American Air Filter Co., Inc., Louisville, Ky.
E. F. Houghton & Co., Philadelphia, Pa.

Personal Members

A. M. Barker, Barker Foundry Supply Co., Los Angeles, Calif.
Walter A. Buechner, E. F. Houghton & Co., Philadelphia, Pa.
John Chumasero, 122 S. Michigan Ave., Chicago, Ill.
Neal F. Clement, Vice-President, Rochester-Erie Foundry Corp., Rochester, N. Y.
George F. Comstock, Titanium Alloy Manufacturing Co., Niagara Falls, N. Y.
Joseph S. Coughlin, Salesman, Corn Products Sales Company, Detroit, Mich.
George C. Davis, North American Mfg. Co., Cleveland, Ohio.
Fred DeBold, Apex Bronze Foundry Co., Oak, Calif.
Fred De Sanno, De Sanno Foundry & Machine Co., Oakland, Calif.
J. E. Drain, Foundry Supt., Oliver Farm Equipment Company, South Bend, Ind.
Luke D. Fahey, Reliable Foundry Co., Dayton, Ohio.
Joseph E. Foster, Army Ordnance Dept., Rock Island Arsenal, Rock Island, Ill.
W. B. Friederichsen, Chattanooga Implement & Mfg. Co., Chattanooga, Tenn.
Geo. W. Fuller, Supt., Repcal Brass Mfg. Co., Los Angeles, Calif.
C. D. Galloway 3rd, Chambersburg Engineering Co., Chambersburg, Pa.
Malcolm E. Gregg, Inland Steel Co., Milwaukee, Wis.
Fred J. Grondie, Kilby Mfg. Co., Cleveland, Ohio.
Hans E. Hansen, Sterling Grinding Wheel Co., Milwaukee, Wis.
J. H. Hause, 264 Townsend St., San Francisco, Calif.
Fred T. Holland, Factory Manager, Pontiac Pattern & Engineering Co., Pontiac, Mich.
Richard H. Hughes, Pacific Metals Co., Ltd., Los Angeles, Calif.
Chris T. Jacobsen, 1065 Folsom St., San Francisco, Calif.
A. C. Kearney, Owner, Kearney Pattern Works & Foundry, San Jose, Calif.
M. H. Landgren, Oakland Steel Foundry Co., Oakland, Calif.
William F. Lange, President, Casting Service Corporation, La Porte, Ind.
Alexander Macintosh, Wright Aero Corp., Paterson, N. J.
Joseph J. Mayer, Lumen Bearing Co., Buffalo, N. Y.
H. L. McClees, Crucible Steel Casting Co., Lansdowne, Pa.
F. N. Miller, Keystone Grey Iron Foundry Co., Philadelphia, Pa.
T. A. Moorman, Forging & Casting Corp., Ferndale, Mich.
B. E. Pheneger, General Supt., Blast Furnace & Coke Works, American Steel & Wire Company, Cleveland, Ohio.
Karl T. Rinderle, Works Engineer, Brown Industries, Inc., Sandusky, Ohio.
P. W. Schumacher, Pacific Electric Mfg. Corp., San Francisco, Calif.
W. H. Shipman, Babcock & Wilcox Co., Barberton, Ohio.
W. W. Thawley, Philadelphia Nonferrous Foundry, Inc., Philadelphia, Pa.
Carl E. Von Luhrte, Chicago Retort & Fire Brick Co., Chicago, Ill.
Frank C. Wheeler, Kimman & Wheeler, Syracuse, N. Y.
A. H. Woerheide, American Pattern & Model Co., St. Louis, Mo.
James Wynn, San Francisco Brass Foundry, San Francisco, Calif.

Personal-Affiliate Members

C. M. Adkinson, Key Co., East St. Louis, Ill.
J. E. Allison, Salesman, E. F. Houghton Co., Milwaukee, Wis.
W. C. Appleby, Manager of Operations, Southern Wheel Division, American Brake Shoe & Foundry Company, New York, N. Y.
P. B. Belches, sales representative, N. Ransohoff, Inc., St. Louis, Mo.

John Bermingham, Sales Repr., E. F. Houghton Co., San Francisco, Calif.

William T. Bricker, Teacher, Patternmaking and Molding, Senior High School, Reading, Pa.

James M. Brown, foundry superintendent, Goslin-Birmingham Manufacturing Co., Birmingham, Ala.

J. H. Carter, Engineer, Electric Steel Foundry Co., Portland, Ore.

Ralph Casparian, Foundry Foreman, L. G. Perkins Foundry, Fresno, Calif.

C. L. Clemons, Key Co., East St. Louis, Ill.

George Clifford, Fulton Foundry & Machine Co., Cleveland, Ohio.

E. R. Crosby, engineer, Smith Facing & Supply Co., Cleveland, Ohio.

F. E. Fisher, Metallurgist, Sloss-Sheffield Steel & Iron Co., Chicago, Ill.

H. A. Forsberg, general superintendent, Continental Roll & Steel Foundry Co., East Chicago, Ind.

Ferdinand Heine, metallurgical assistant, Maynard Electric Steel Castings Co., Milwaukee, Wis.

Fred W. Hintze, Salesman, Illinois Clay Products Co., Chicago, Ill.

Mervin H. Horton, metallurgist, Deere & Co., Moline, Ill.

H. E. Hostetter, metallurgical engineer, Climax Molybdenum Co. of Michigan, St. Louis, Mo.

Herbert W. Kelly, engineer, Meehanite Metal Corp., Chicago, Ill.

A. M. Kennedy, vice president, Pittsburgh Coke & Iron Co., Pittsburgh, Pa.

Roy A. Lindgren, superintendent, Blast Furnace Dept., Wisconsin Steel Works, South Chicago, Ill.

Robert MacDonald, Instructor, Wisconsin Vocational & Adult Education, Madison, Wis.

Leslie O. Nowett, core foreman, General Steel Castings Corp., Eddystone, Pa.

R. T. Pamment, sales engineer, Utility Electric Foundry Co., Los Angeles, Calif.

O. F. Patzke, vice president, Smith Steel Foundry Co., Milwaukee, Wis.

Frank L. Payne, Asst. Foundry Supt., Pontiac Motor Car Co. Foundry, Pontiac, Mich.

R. B. Sample, McWane Cast Iron Pipe Co., Birmingham, Ala.

Noble J. Schmidt, treasurer, Gunite Foundries Corp., Rockford, Ill.

Charles V. Sharritt, Key Co., East St. Louis, Ill.

A. C. Shelton, pattern shop foreman, Key Co., East St. Louis, Ill.

Al. J. Struel, foreman, Key Co., East St. Louis, Ill. Ill.

Ranney J. Thompson, engineer, National Malleable & Steel Castings Co., Cleveland, Ohio.

Frank W. Wells, J. I. Case Co., Rock Island, Ill.

Foreign Members

Herbert Harris, Babcock & Wilcox, Ltd., Renfrew, Scotland.

December and January Chapter Meetings

December 13
St. Louis
York Hotel
"Annual Christmas Party"
E. H. KING—*"Foundry Sands"*

✦ ✦

December 14
Northeastern Ohio
"Annual Christmas Party"

✦ ✦

December 16
Wisconsin
Schroeder Hotel, Milwaukee
"Christmas Party"

✦

Southern California
Rio Rondo Country Club
"Second Annual Hi-Jinx"

✦ ✦

December 19
Quad City
Blackhawk Hotel, Davenport, Ia.
DUNCAN P. FORBES—*"Cost—Profit"*

✦ ✦

January 9
Metropolitan New York-New Jersey
Essex House, Newark, N. J.

✦

Chicago
Medinah Club
S. W. UTLEY, *Pres.*, Detroit Steel Casting Co.

January 10
Buffalo
"Big Stag Nite"

✦

Northern Illinois-Southern Wisconsin
Rockford
MARSHALL POST—*"Cement Molding"*

✦ ✦

January 11
Northern Indiana-Southern Michigan
Hotel Oliver, South Bend
MARSHALL POST—*"Cement Molding"*

✦ ✦

January 12
Northeastern Ohio
Cleveland Club

✦

St. Louis
York Hotel
J. R. HEWITT—*"X-Raying of Castings"*

✦ ✦

January 13
Metropolitan Philadelphia
Engineer Club
V. T. MALCOLM—*"Alloy Steel Castings"*

January 16
Quad City
Le Claire Hotel, Moline
FRED J. WALLS—*"Alloy Castings"*

✦ ✦

January 19
Detroit
L. P. ROBINSON—*"Latest Developments in Core Room Control"*

✦ ✦

January 20
Ontario
Toronto
DEBATE—*Forehearths*

✦

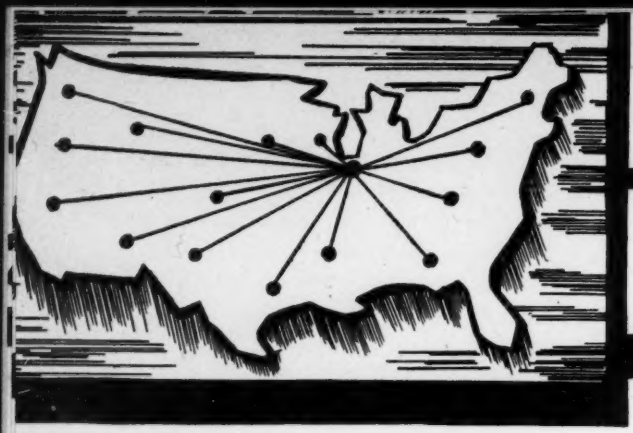
Birmingham
Tutwiler Hotel
"Manufacture of Pig Iron and Coke for Foundry Uses"

✦

Wisconsin
Hotel Schroeder, Milwaukee
"Health and Safety"

✦ ✦

January 26
Southern California
"Alloys"



Chapter Activities

Apprentice Training Stressed at St. Louis Meeting

By J. A. Kelin,* St. Louis, Mo.

THE November 10 meeting of the St. Louis Chapter was held at the David Ranken, Jr., School of Mechanical Trades. With the co-operation of the school's staff, the meeting was arranged to discuss apprentice training. After a fine dinner served by the boys of the school, the business session was opened by the chapter vice-chairman, L. E. Everett, Key Company, in the absence of Chairman J. O. Klein.

After officer and committee reports were read, the meeting was turned over to C. R. Culling, chairman of the Chapter Apprentice Committee, under whose auspices the evening program was presented. Mr. Culling introduced Mr. Bass, director of the school, who gave a comprehensive outline of Ranken's history, explaining in detail its plan of enrollment, training and plant operation. Thomas Ross, head of the school's pattern making department, then introduced the speaker of the evening, S. M. Brah, International Correspondence Schools, Chicago, and member of the A.F.A. Apprenticeship Committee. Mr. Brah gave an unusually inspiring and interesting talk on apprentice training, outlining many tried and proved plans as well as commenting on the application of the new federal wage and hours act to the trade.

Before closing the meeting, the chairman announced that the 1939 regional foundry conference would again be held in co-operation with the Missouri School of Mines and Metallurgy at Rolla, with the conference committee on arrangements being again under the chairmanship of Louis J. Desparois, Pickands Mather & Co., who had so ably handled the committee for the past two years. Other appointments to the committee were:

George Mitsch, American Car & Foundry Co.

C. R. Culling, Carondelet Foundry Co.

L. C. Farquhar, American Steel Foundries.

Carter Bliss, Scullin Steel Co.

Webb Kammerer, Midvale Mining & Mfg. Co.

J. W. Kelin, Federated Div., American Smelting & Refining Co.

*Federated Metals Division, American Smelting and Refining Corp., and Secretary-Treasurer, St. Louis Chapter.

Metropolitan Philadelphia Chapter Studies Aluminum Casting Methods

By J. T. Fegley,* Philadelphia, Pa.

THE November 11 meeting of the Metropolitan Philadelphia Chapter was a very decided success with 135 in attendance. The meeting was held at the Engineers Club with Chairman Harold Henszey presiding.

After dinner a talk was given by Dr. Stanley P. Riesman, internationally known cancer expert, head of cancer research at Lankenau hospital, and professor at the University of Pennsylvania Medical School. He spoke on "Cancer and Cancer Growth," and illustrated his talk with many slides. He was introduced by Mr. Lee Harris, general manager of Olney Foundry Co.

Dr. G. H. Clamer, president of the Ajax Metal Co., introduced H. J. Rowe, engineer, Aluminum Company of America, Cleveland, O., who spoke on "Aluminum Alloy Castings, Their Manufacture and Use." Mr. Rowe stated that although aluminum is the most recent of metals to be used for casting purposes, the rather rapid development of the industry indicates that the castings of this metal must possess some particular properties, by virtue of which their many uses have been created. Properties of outstanding significance are low specific gravity; high strength-weight ratio, particularly in the case of the heat treated alloys; high thermal and electrical conductivity; excellent resistance to various corrosive mediums; and relative ease of finishing, either by machining or polishing.

Pure aluminum is seldom used for castings, since it is comparatively soft and does not possess very desirable casting characteristics. By the addition of various alloying elements or hardeners, suitable alloys have been developed with both improved casting characteristics and physical properties. By alloying alone, strengths about twice those of pure aluminum are developed. In addition, certain elements are susceptible to heat treating processes which further increase the strength. Thus a great many alu-

*North Bros. Mfg. Co., and chairman, Publicity Committee, Metropolitan Philadelphia Chapter.

minum alloys are available today, providing a wide range of properties and other characteristics desired for engineering purposes.

Like other ferrous and nonferrous alloys, aluminum alloys possess certain inherent properties which have a direct bearing on the methods used for handling them in the foundry. Such properties as their low specific gravity, hot shortness tendencies, high crystallization shrinkage and oxidation characteristics must be understood in order to provide the foundry practice best suited for the production of castings of these alloys. By far the majority of foundry trouble encountered with aluminum alloys can be traced to a melting and pouring practice or gating, risering or chilling practice, employed without consideration of the aforementioned characteristics.

Melting and pouring temperatures alone have a much greater effect on the properties of aluminum alloy castings than may be generally recognized. It is, however, a proved fact that a casting poured at the lowest possible temperature will have finer grain, fewer defects, and higher mechanical properties than the same casting poured at any higher temperature. Aluminum, unlike the ferrous alloys, does not readily reflect its temperature by its color, and to control this factor, therefore, requires suitable pyrometric equipment.

The strength of aluminum alloy castings, as well as the general soundness, is also dependent to a great extent on the gating employed. The ideal gating is the one which provides a uniform, rapid, and progressive solidification, proceeding from the points farthest from the gates and risers toward these gated areas. In sand molds, this condition is obtained by proper location and size of gates and careful use of risers and chills.

Aluminum alloy castings are today used for many applications in the transportation, material handling, machinery, electrical, building, and other industries. Needless to say, such castings as are used in these fields are used only because they fulfill the requirements better than castings of other metals, or permit some operating or production economy. The more complete realization by the foundries of the improvements in quality possible by foundry technique, and by the engineers of the available properties, has given aluminum alloy castings a well defined place among engineering materials.

Permanent Mold Casting Engages Interest of Metropolitan N. Y.-N. J. Chapter

By T. J. Wood,* Passaic, N. J.

THE regular monthly meeting of the Metropolitan New York-New Jersey Chapter was held on November 7 at the Essex House in Newark, N. J. Chairman Don Reese presided and introduced the speaker of the evening, E. C. Hoenicke, sales manager of the Eaton-Erb Foundry Co., Vassar, Michigan. Over 70 members and guests were present to hear Mr. Hoenicke's talk on "Permanent Mold Castings."

Tracing the course of development of the permanent mold process for gray iron castings, Mr. Hoenicke described the various improvements made from the time of its inception up to its present high degree of efficiency. Close metallurgical control is essential, a high carbon, high silicon cast iron being used in most cases. Although the castings are gray "as cast," they are subsequently given a short anneal at 1550° F. to eliminate possible machining difficulties arising from hard spots.

The technique employed with respect to gates and risers is most unorthodox when compared with green or dry sand molding practice, but ample testimony to the effectiveness and versatility of the process was given in the wide variety of samples which Mr. Hoenicke had thoughtfully arranged to have on display. The discussion which followed was lively and spontaneous, and concluded a most enjoyable evening.

It was announced that the speaker at the forthcoming meeting on December 5 will be the well known Pat Dwyer, engineering editor of The Foundry, his subject being "Gates and Risers."

*Robins Conveying Belt Co., and Secretary, Metropolitan New York-New Jersey Chapter.

Wisconsin Chapter Hears Talk by President Post

By B. D. Claffey,* Milwaukee, Wis.

THE Wisconsin Chapter held its November meeting on the 18th at the Hotel Schroeder, Milwaukee, with Chapter President Roy M. Jacobs, Standard Brass Works, presiding. There was a splendid attendance at this meeting which was designated as National Officers' Night. Mr. Jacobs first introduced C. E. Hoyt, A.F.A. Executive Vice-President, who conveyed the greetings of the Association's officers and directors, congratulating the chapter on the splendid program of activities which it had been carrying out.

Chairman Jacobs then introduced Marshall Post, Birdsboro Steel Foundry and Machine Co., and President of the American Foundrymen's Association. Mr. Post gave an exceedingly interesting illustrated talk on the Randupson or cement mold process, as used in his plant and others. He described the air drying procedure in molding and core making. His talk was fol-

*General Malleable Corp., and secretary, Wisconsin Chapter.

lowed by a question and answer period.

Previous to this meeting, the chapter board discussed plans for the Christmas party to be held on December 16, and a program was outlined for an annual regional foundry conference, to be held in Milwaukee February 16 and 17 in conjunction with the University of Wisconsin. Under the chairmanship of Charles Wesley, the conference committee is arranging for sessions on gray iron, malleable, steel and non-ferrous casting practices.

Runge and Evans Address Northeastern Ohio Chapter

OVER 140 members and guests were present at the regular meeting of the Northeastern Ohio chapter held at the Cleveland club, Cleveland, on Nov. 10. L. P. Robinson, chairman of the chapter, presided and introduced R. E. Kennedy, national secretary, who spoke briefly, conveying greetings of the national office, and calling attention to the next annual meeting of the A.F.A. to be held in Cincinnati. Mr. Robinson then introduced E. T. Runge, Cleveland, who delivered a short talk on costs.

The main speaker of the evening was George S. Evans, Mathieson Alkali Co., New York, who discussed refining of cast iron. He pointed out that through the addition of fused soda ash to the mixing ladle, the molten iron is not only desulphurized to an appreciable degree, but also the iron is refined by the removal of inclusions which may be present. Mr. Evans stated that use of fused soda ash in the cupola speeded up combustion reactions and reduced oxidation.

Amount of soda ash used in the cupola ranges from 2 to 8 pounds per ton. If more than that quantity is employed, trouble may ensue from foaming. In the ladle the amount may range from 10 to 20 pounds per ton. The average amount of sulphur removed is around 60 per cent. In addition the physical properties of the iron are increased. Mr. Evans showed numerous slides containing tables, charts, and views of installations where fused soda ash is used.

Chicago Chapter Enthusiastic Over Steel Film

By L. L. Henkel,* Chicago, Ill.

SOME four hundred members and guests were present at the November 14 meeting of the Chicago Chapter, held at the Medinah Club. Chapter Vice-Chairman C. E. Westover, Burnside Steel Foundry Co., presided in the absence of Chairman Rudesill. The attendance was the largest the chapter has had at a regular monthly meeting. Reports were presented by committee chairmen, H. W. Johnson reporting on the Purdue Regional Conference, J. J. Fox on membership and A. W. Gregg on the Junior Foundrymen Club.

Following the reports, the chairman introduced Walter E. Hadley, Manager of Operations, Chicago district, Carnegie-Illinois Steel Corporation. Mr. Hadley, in discussing "Steel—Man's Servant," gave some most interesting information on steel's place in the life of modern industry and civil life. His talk was followed by a showing of the steel corporation's beautiful and amazingly well constructed technicolor film on steel production and its major uses. Beginning with the mining of ore, the picture showed the ore transportation and unloading, blast furnace operation, open hearth and converter refining, rolling, pressing and other means of fabrication, finally showing many of its uses. The picture was acclaimed by all as the finest of industrial films and one which should give the general public a much better understanding of the high place of modern industry in our nation's progress.

Purdue Conference Groups Upper — Spectrographic Session. Lower — Steel Men Hold Outdoor Conference.

*Interlake Iron Corporation, and Secretary, Chicago Chapter.

High Strength Cast Iron Discussed at Buffalo Meeting

By J. R. Wark,* Buffalo, N. Y.

WITH W. J. Corbett, vice-chairman of the chapter, presiding, the regular monthly meeting of the Buffalo Chapter was held November 7 at the Hotel Touraine. This meeting, with 85 in attendance, was held jointly with the Buffalo Chapter of A.S.M., the speaker being R. G. McElwee, Vanadium Corporation of America. Mr. Nelson, chairman, and J. Birdsong, secretary of the A.S.M. Chapter, were at the speakers' table and assisted in handling the affairs of the evening.

Chairman Corbett announced the regional foundry conference to be held at Cornell University and other forthcoming meetings of the chapter. He then introduced Mr. McElwee, who gave an interesting talk on "High Strength Cast Iron." Dealing with the various uses of this type of iron, he explained the effect of the various alloys which contribute to the versatility of high strength irons. In summing up, he explained the constitution and properties, naming the principal alloying elements and the part each plays in the properties obtained. The discussion was lively and produced several debates on the questions raised.

*Queen City Sand and Supply Co., and Secretary, Buffalo Chapter.

President Post Addresses Quad City Chapter

By J. Morgan Johnson*, Moline, Ill.

ANOTHER large turnout, this time 150 members, greeted Chapter Chairman M. J. Gregory, Caterpillar Tractor Co., when he opened the November 21 meeting of the Quad City Chapter. This meeting was held at the Ft. Armstrong Hotel, Rock Island, Ill.

Chairman Gregory, after calling for a report on the Iowa Regional Conference by Horace Deane, chairman of the conference committee, first presented C. E. Hoyt, Executive Vice-President of the A.F.A. Mr. Hoyt discussed briefly the work of the Association. Chairman Gregory then presented Hyman Bornstein, past-president and director of the A.F.A., who in turn introduced the speaker of the evening, Marshall Post, Birdsboro Steel Foundry and Machine Co., Birdsboro, Pa., and President of the American Foundrymen's Association.

President Post spoke on the subject of "Castings by the Randupson Process." This topic was introduced by a brief history of the foundry industry in the Birdsboro, Pa., district. The speaker stressed the large strides made in this industry, paralleling those made in other lines.

The Randupson process, one of those coming out of the progressive world of making castings, was clearly explained. Many features of this process of molding, sometimes called the cement molding process, were explained. These were shown to be in many cases the same as for sand molding. Other features cited were extremely clean casting surfaces and accuracy to the extent that many castings do not need any machining and little grinding. An extensive discussion period followed Mr. Post's talk.

*Tri-Cities Manufacturing Association, and secretary, Quad City Chapter, A.F.A.

Costs Discussed at Freeport

By H. C. Winte,* Rockford, Ill.

JOHN T. CLAUSEN, chairman of the Northern Illinois-Southern Wisconsin Chapter, presided at the chapter meeting held November 8 at Hotel Freeport, Freeport, Ill.

Over 60 members and guests were present to hear the speaker of the evening, R. L. Lee, Liberty Foundry Co., Wauwatosa, Wis. Mr. Lee, who is chairman of the A.F.A. Foundry Cost Committee, in his talk brought out the need of a standard cost system in the foundry industry. He discussed some of the objectives of the A.F.A. Cost Committee and gave a review of its past activities. He then reviewed the foundry cost methods being followed at the Liberty Foundry Co. An interesting part of his discussion was the classification and application of cost items for the various departments of a foundry.

*Fairbanks, Morse & Co., Beloit, and technical secretary, Northern Illinois-Southern Wisconsin Chapter.

Detroit Chapter Meets at Pontiac

By H. J. Deutsch*, Detroit, Mich.

THE November 17 meeting of Detroit Chapter, held at the Roosevelt Hotel, Pontiac, Mich., was the record meeting of the chapter from the standpoint of attendance. Held at Pontiac in appreciation of the strong support given by members in the area, the meeting was advertised as national officers' night, with Marshall Post, President of A.F.A., speaking on the cement molding process for producing castings. President Post's talk was most interesting and was well illustrated with lantern slides and motion pictures. This presentation prompted many questions, especially as the process applied to jobbing foundries. President Post was accompanied by C. E. Hoyt, Executive Vice-President of the A.F.A., who conveyed the greetings of the Board to the chapter.

*Aluminum Company of America, and secretary, Detroit Chapter.

South Bend Foundry Meets

M. A. SCOTT, Greenlee Foundry Co., Chicago, discussed new ideas on gating and risering before a group of Indiana and Michigan foundrymen at a meeting held December 9, at the Hotel Oliver, South Bend, Indiana. This meeting was arranged by the A.F.A. to promote regular meetings for the members in this district.

President Post is scheduled to speak before this group on January 11.

FUNDAMENTAL FOUNDRY INFORMATION

Available in A. F. A. Publications

Testing and Grading Foundry Sands and Clays

208 pp., 6x9, (1938, Fourth Edition). Cloth Binding. Price $4.00. Member's price $2.00.

Standards and tentative standards for testing and grading foundry sands and clays adopted by the A.F.A., as prepared by the Committee on Foundry Sand Research. Covers sampling, test methods for permeability, strength, fineness, mold hardness, dye absorption, sintering, core properties, methods for chemical analyses, and grading classifications. Equipment described.

Electric Power Costs in the Foundry

Planographed, 26 pp., 8½x11, (1933). Price $1.00.

Report of conference on electric power costs, prepared by an A.F.A. committee on this subject. Presents comprehensive data obtained from survey made to cover conditions existing in the various states, with 129 foundries reporting. Data covers demand charges, k.w.h. ratio, ratio of total bill to demand charge, power factor and per cent of selling price of castings represented by power costs. Extensive discussion.

Present Status of Foundry Sand Investigation and Control, by W. G. Reichert, (1935).

Price $1.00. Member's price $0.50.

This is a complete review of foundry sand control by a metallurgist who has established sand control in his plant on practical, economical basis. A publication which everyone connected in any way with the use of sands should have in his handy reference file. It shows how testing and grading methods should be applied, the essentials of sand control for molding and core rooms, the laboratory and the superintendent's office. Written in understandable style for the practical shop man, yet is of the greatest value to the foundry engineer.

Tentative Recommended Good Practice Code and Handbook on Fundamentals of Design, Construction, Operation and Maintenance of Exhaust Systems (1938).

Price $4.00. To members $2.00.

Third of a series of codes for the control and abatement of occupational disease. Gives complete engineering information. The exhaust systems are detailed on an engineering basis. Will be useful in the purchase of new equipment or exhaust systems, and in the revision, to make more efficient, present systems. Shows how to do the job intended at a minimum cost. Research work performed in developing this code gives entirely new information and data on resistance losses of friction in straight pipes and elbows. Complete with almost 200 pages, including 35 charts and engineering diagrams. Appendix gives an example of an exhaust system completely worked out, step by step, showing the proper use of all rules and formulae given in text.

Standard Pattern Color Charts

Price 5 cents each in lots of 5 to 50. $4.00 per 100.

Recommended colors for wood patterns and core boxes. Approved by Joint Committee and adopted by Division of Simplified Practice, Bureau of Standards. Includes color page suitable for displaying on bulletin board in pattern shop and foundry. Poster 17x11-in.

Pearlitic Malleable Cast Iron

An A.S.T.M. publication. 32 pp., 6x9, (1936). Price $0.60; to A.F.A. and A.S.T.M. members $0.35.

Compiled from various sources by a special committee of the A.S.T.M. Covers classification, producer's data on various classes and patent literature. Considered of much value to those interested because published data since 1923 is largely in patent papers.

Steel Castings (A.F.A.-A.S.T.M. Symposium).

Heavy paper binding, 254 pp., 6x9, (1932). Price $1.00.

A compilation of ten papers giving critical information and data on the properties of practically all classes of steel castings. Includes data on methods of molding, casting, use of alloys and heat treatment. Design and specifications fully treated. Extensive discussion.

Steel Casting Design for the Engineer and the Foundryman, by C. W. Briggs, R. A. Gezelius and A. R. Donaldson.

Heavy paper binding, 68 pp., 6x9, (1938), 56 illustrations. Price $0.50.

Steel casting design considered from two viewpoints, that of the designing engineer and that of the foundryman. A code, or nucleus, of a set of rules is presented for the engineer's guidance and experimental results on padding, external and internal chills, and controlled directional solidification are reported as of interest to foundrymen.

The Influence of Design on the Stress Resistance of Steel Castings, by R. A. Bull.

Heavy paper binding, 62 pp., 6x9, 22 illustrations, (1937). Price $0.50. To members $0.35.

A report prepared under direction of A.F.A. Steel Division Committee. Containing assembled data for the guidance of those who use and manufacture steel castings.

Foundry Costs

Heavy paper binding, 48 pages, 6x9, (1937). Price $1.00. To members $0.50.

Report of proceedings of 1937 convention session on foundry costs, containing cost system outlines for the malleable, gray iron and non-ferrous foundries.

Job Evaluation and Time Motion Study and Job Standardization

Heavy paper binding, 49 pp., 6x9, (1937). Price $1.00. To members $0.50.

Proceedings of 1937 convention session on job evaluation and foundry time study, together with discussion. The paper on time study and job standardization outlines methods used in a foundry carrying on jobbing type of work, giving charts of various molding operations. The job evaluation paper describes system used in a large plant to establish a wage rate for each job in the factory.